

CHAPTER 3

STOWAGE

Stowage is the assembly of material from various sources held and protected in the warehouse or storeroom until needed. Materials stowed in various storerooms aboard ship must be arranged to:

- make sure of maximum use of available space,
- provide orderly stowage and ready accessibility,
- prevent damage to the ship or injury to personnel,
- prevent damage to materials,
- make it easier to issue the oldest stock first using the first in, first out (FIFO) method, and
- make it easier to conduct an inventory.

The effective arrangement of materials in storerooms aboard ships begins with the person in charge of the storeroom and continues up the chain of command. Storerooms aboard ship will not be the same size and each storeroom will present a different problem when you are arranging stock. Some storerooms may be difficult to get to because they are in small, out of the way spaces. Many storerooms may have frames, pipes, stanchions, and other obstacles that may interfere with your stowage plans. This is why you often have to change your plans for arranging stock in different storerooms.

BULK STOREROOM STOWAGE

Ship's store storerooms are referred to as bulk storerooms. They are designated Group III spaces when materials intended for resale are stowed in

them. Group III spaces must be secured according to procedures discussed in chapter 1.

The person in charge of the bulk storeroom(s) is referred to as the bulk storeroom custodian and is responsible to the ship's store officer for all material in his or her space(s). The bulk storeroom custodian accepts responsibility for this material, once he or she signs the receipt document and accepts custody of the material. Materials stowed in the ship's store bulk storeroom must be limited to ship's store and standard Navy clothing stock. Any other articles not in the custody of the bulk storeroom custodian must not be stowed in the same storeroom. If an emergency exists, the commanding officer may authorize, in writing, for articles to be stowed in the same storeroom as ship's store and standard Navy clothing stock. Once the emergency passes, articles will be stowed in a separate space.

RESPONSIBILITY OF BULK STOREROOM CUSTODIANS

The ship's store officer is required to assign the responsibilities of the bulk storeroom custodian in writing. Once the persons assigned understand their responsibilities and accept them, they are then responsible to the ship's store officer for performing their duties properly.

The bulk storeroom custodian's primary responsibility is the proper stowage, security, financial accountability, receipt, and expenditure of all stock in the bulk storeroom. The bulk storeroom custodian will receive and issue stock to various ship's store activities once the proper paper work is received. The custodian is also responsible for the protection of stores from damage or deterioration and is the only person who will have access to the bulk storeroom except under emergency entry procedures discussed in chapter 1 of this manual. The custodian must keep stock arranged in the storeroom so breakouts, issues, inventories, and so forth, are easier to

accomplish. Figure 3-1 shows a Ship's Serviceman arranging stock in the bulk storeroom.

RANGE OF RESPONSIBILITIES

Your range of responsibilities as the bulk storeroom custodian may differ from one ship to the next. Your actual responsibilities will be the same, but the size of the ship's store operation and the number of storerooms will determine the difficulty of your tasks.

You may be assigned to a ship that has only 1 bulk storeroom aboard, or a large aircraft carrier that has 10 or more bulk storerooms.

When there is more than one bulk storeroom, the ship's store officer will normally number each bulk storeroom 1, 2, 3, and so forth. However, on a large ship such as an aircraft carrier with 10 or more storerooms it may create confusion to number the storerooms in this order. The ship's store officer may elect to number the bulk storerooms using the compartment and frame number of the ship where they are located (for example: bulk storeroom numbers 2-325-0-A, 3-405-1-A, 01-544-1-A, and so forth).

On a large ship with several storerooms, the ship's store officer will normally split up the storerooms between different custodians for



Figure 3-1. Stock arrangement.

43.1

accountability purposes. It would be unfair and unrealistic to assign one person the responsibility for so many storerooms, so the ship's store officer usually assigns one custodian the responsibility for about three storerooms. The number of storerooms each custodian will be responsible for depends on the manpower availability and the overall number of storerooms aboard ship.

MAINTAINING FINANCIAL ACCOUNTABILITY

In the ship's store operation, each custodian must maintain financial accountability for all stock within his or her area of responsibility. This simply means that the custodian is responsible for maintaining the money value of all stock to prevent a shortage or overage during inventory.

Past inspections have shown that the single most contributing factor to lack of financial accountability for stock in the bulk storeroom is a breakdown in internal checks and controls. Although human perfection is virtually impossible, the custodian of the bulk storeroom must always strive to come as close to perfection as possible. The internal checks and controls we are talking about are included throughout the *Ships Store Afloat*, NAVSUP P-487, and are designed to cut down or eliminate inventory shortages. In this section we discuss some of the major checks and controls considered necessary in maintaining financial accountability in the bulk storeroom, but it will be entirely up to each individual bulk storeroom custodian to always follow the correct procedures outlined in the NAVSUP P-487 when performing daily tasks.

Errors in Receiving

When the bulk storeroom custodian acknowledges receipt of ship's store stock, he or she is accepting responsibility for the disposition of that stock. However, if the responsible custodian does not follow the correct procedures for receiving stock, then he or she is risking financial accountability of the bulk storeroom.

All material received is inspected by the ship's store officer or designated receipt inspector for quantity, quality, and damage. Once this is done, the material is carried to the bulk storeroom. The bulk storeroom custodian will obtain the retained receipt documents from the Incoming Material File (SSA-20), take them to the bulk storeroom, and wait until the stock is brought by the working party. The responsible custodian will make sure

boxes brought to the storeroom are not opened and all boxes arrive. If boxes are being numbered by the receipt inspector, the custodian will make sure all numbers are accounted for. Only personnel authorized by the bulk storeroom custodian should be in the storeroom to assist in loading operations.

The custodian of the bulk storeroom accepts the merchandise by circling the quantity received on the receipt document and signing the accountability stamp as shown in figure 3-2. If the quantity of the item counted is not the same as what is shown on the receipt document, record and circle the actual quantity received and cross out the quantity shown on the receipt document. All cross outs must be initialed. The custodian accepting the merchandise and signing the accountability copy is legally responsible for the proper disposition of the material while it is in his or her custody. The custodian will forward the copy of the signed receipt document to the ship's store officer.

The custodian receiving stock into the bulk storeroom must make sure what is signed for is exactly what is received. The custodian must never take for granted what stock is received and just sign the stamped receipt document. The custodian must always make sure the quantity received is the same as shown on the receipt document. If it isn't, the custodian must change the quantity shown on the receipt document to the actual amount received and circle it. It is acceptable for the custodian to use the quantity indicated on the outside of the container if the container has not been opened previously. If the container has been opened before, do not take for granted all the merchandise is in the container—always check it carefully.

Movement of Stock

Most stock movements between the bulk storeroom, sales outlet, and service activities are accomplished through breakouts, breakbacks, and intrastore transfers. This includes items that will be sold to customers and items to be consumed directly in the performance of service for customers such as the laundry or barbershop.

Items that are carried for sale in the sales outlet are considered retail items. Retail items include items sold through the retail store, the snack bar, vending machines, and standard Navy clothing sold at standard prices. The internal movement of these retail items is commonly referred to as a breakout.

Items that are carried for ultimate expenditure as cost of operation materials and cost of sales items are called cost items. Cost of operation items include items used in the performance of service to customers; for instance, items used in the laundry, barbershop, and repair parts used for the vending machines and snack bars. The internal movement of cost of operation items is referred to as an issue.

Cost of sales items require further processing or manufacturing and include snack bar ingredients, soft drink syrup, carbon dioxide gas (CO₂), straws, spoons, and paper cups. The internal movement of cost of sales items is referred to as a breakout, like retail items.

A breakback is just the opposite of a breakout. The breakout is when merchandise is transferred from the bulk storeroom to the sales outlet while a breakback is when merchandise is taken from the sales outlet and returned to the bulk storeroom. The internal movement of stock whether breakout, breakback, or issue is documented on an Intra-Store Transfer Data, NAVSUP Form 973.

Requests for breakouts are routed by the sales outlet or service activity operators to the ship's store office for processing. After the office prepares a NAVSUP Form 973, there are certain procedures the bulk storeroom custodian should follow. The ship's store office will distribute the original and duplicate copy of the NAVSUP Form 973 to the bulk storeroom custodian to issue the stock. The triplicate copy is retained by the records keeper. The quadruplicate copy is given to the sales outlet or service activity operator receiving the stock.

On receipt of the original and duplicate copy of the NAVSUP Form 973, the bulk storeroom custodian will break out the stock. The bulk storeroom custodian must record the quantities broken out on the two documents and sign and forward the original to the office recordskeeper. The duplicate copy is retained by the bulk storeroom custodian.

The sales outlet or service activity operator will not have access to the original or the duplicate copy. Once the stock is received in the sales outlet or the service activity, the operator will record the quantities received on the quadruplicate copy of the NAVSUP Form 973. The operator acknowledges receipt of the stock by signing the quadruplicate copy and forwards it directly to the recordskeeper.

After the recordskeeper receives the original and quadruplicate copy, the quantities received

will be circled on the original and entered and circled on the triplicate copy. If a discrepancy is noted between what the bulk storeroom custodian broke out and what the sales outlet or service activity operator received, an inventory will be conducted immediately of the item in the bulk storeroom and the count compared against the corresponding Stock Record, NAVSUP Form 464. After reaching an agreement on the actual quantities broken out, the bulk storeroom custodian and sales outlet operator will correct and initial all copies of the NAVSUP Form 973.

Security Controls

In chapter 1 we discussed the controls necessary for maintaining security in supply department spaces. You learned that the bulk storeroom is a Group III space and that it must be secured properly to prevent pilferage or theft. If your bulk storeroom does not conform to these security controls, then you risk losing financial accountability for the space.

Figure 3-3 is a sample security evaluation sheet listing the major controls necessary in maintaining security in the bulk storeroom. When using this sheet, you can determine whether your bulk storeroom is or is not conforming to these controls by the YES or NO markings. If the security control listed on the evaluation sheet does not apply to your storeroom, leave it blank. Any controls to which you answer NO must be promptly investigated and corrected.

Spot Check Inventories

During the fiscal year, the ship's store officer will conduct spot check inventories in the bulk storeroom at unannounced times. The purpose of spot check inventories is to determine if there are any differences between stock on hand in the bulk storeroom and the quantity shown on the Stock Record, NAVSUP Form 464. At a minimum, the ship's store officer should inventory at least 5 percent of the stock in the bulk storeroom monthly. Normally, the spot check inventory should be taken after a breakout or issue. The bulk storeroom custodian will indicate the balance on hand of each item on the Intra-Store Transfer Data, NAVSUP Form 973, after making the breakout or issue. The ship's store officer may also prepare a local spot check inventory sheet similar to the one shown in figure 3-4. The ship's store officer will issue this document to the bulk storeroom custodian with the item descriptions

BULK STOREROOM SECURITY EVALUATION SHEET

1. Are keyless padlocks (NSN 5340-00-285-6523) and a dead bolt door lock used to secure the bulk storeroom?
YES_____ NO_____
2. If dead bolt door locks are impractical to install, are high-security key-type padlocks with shrouded shackles used instead?
YES_____ NO_____
3. Are high-security hasps installed on the door to the bulk storeroom and have any hinge pins that are exposed been tack welded to prevent removal?
YES_____ NO_____
4. Is the combination to the bulk storeroom keyless padlock and the setting-in key placed in a signed, sealed, and dated envelope and held in the ship's store officer's safe?
YES_____ NO_____
5. Are duplicate keys to the bulk storeroom kept in the ship's store officer's safe in a sealed envelope?
YES_____ NO_____
6. Has the combination to the bulk storeroom lock been changed within the last 6 months and/or on relief of the ship's store officer or responsible custodian?
YES_____ NO_____
7. If your bulk storeroom has an intrusion alarm system, is it connected to a central area that is manned 24 hours a day?
YES_____ NO_____
8. Are emergency entry procedures posted near the entrance to the bulk storeroom where they may be readily seen?
YES_____ NO_____
9. If the keyless padlock (NSN 5340-00-285-6523) is not available from the supply support activity, are you using key-type padlocks (NSN 5340-00-682-1508 or 5340-00-582-2741) in conjunction with a car seal to secure the bulk storeroom?
YES_____ NO_____
10. When using car seals to secure the bulk storeroom, are the numbers to the car seals logged in the car seal number log?
YES_____ NO_____
11. Before removing any car seals, do you make sure the number on the car seal you are removing is the same number recorded in the car seal number log?
YES_____ NO_____
12. When setting combinations on the keyless padlock, did you pick numbers randomly and not use popular dates or other easy to guess numbers?
YES_____ NO_____

Figure 3-3.—Bulk storeroom security evaluation sheet.

13. Are you careful not to record your combination anywhere except on the piece of paper placed in the sealed envelope?
YES_____ NO_____
14. Did the ship's store officer place transparent tape over the flaps of the sealed envelope that you and he or she signed?
YES_____ NO_____
15. Does the responsible custodian of the bulk storeroom refrain from disclosing the combination to the keyless padlock on the bulk storeroom to any other person?
YES_____ NO_____
16. If articles other than ship's store or standard Navy clothing stock are stowed in the bulk storeroom, does the commanding officer authorize such action?
YES_____ NO_____
17. Are only authorized personnel allowed into the bulk storeroom?
YES_____ NO_____
18. Are small high-value items stowed in a locked security room or cage within the bulk storeroom when possible and, if not, are they kept out of sight?
YES_____ NO_____
19. Are adjacent passageways to bulk storerooms kept well lighted and are all lights operational?
YES_____ NO_____
20. Do shipboard security watches frequently check your bulk storeroom during the day and night?
YES_____ NO_____
21. If the bulk storeroom has any accessible openings, are they secured by using bars, grilles, or expanded metal?
YES_____ NO_____
22. Is the responsible custodian prohibited from keeping personal belongings in the bulk storeroom?
YES_____ NO_____

Figure 3-3.—Bulk storeroom security evaluation sheet—Continued.

and stock numbers. The responsible custodian will go to the bulk storeroom, make the counts, and return the spot check inventory sheets to the ship's store officer. The ship's store officer will compare the counts with the amounts shown on the NAVSUP Form 464 to make sure inventory accuracy is maintained at 100 percent. Any differences will be handled as a gain or loss by inventory. Ships operating under combined responsibility are not required to do spot check inventories.

Tax-Free Tobacco Products

As the bulk storeroom custodian, you will become directly involved in maintaining accountability for tax-free tobacco products. Tax-free tobacco products must be strictly accounted for because they cannot be sold within the 3-mile limit of the United States. Several tax-free tobacco products will probably be stowed in your storeroom especially when your ship is going through several extensive underway periods.

SPOT CHECK INVENTORY

DATE _____

ITEM DESCRIPTION	STOCK NUMBER	BULK STRM COUNT	NAVSUP 464 COUNT	DIFFERENCES (+) or (-)	REMARKS

REMARKS

BULK STOREROOM CUSTODIAN DATE

RECORDSKEEPER DATE

SHIP'S STORE OFFICER DATE

SUPPLY OFFICER DATE

Figure 3-4.-Spot check inventories.

Inventories must be taken of all tax-free tobacco products when arriving and departing beyond the 3-mile limit of the United States. Inventories will be recorded on the Tax-Free Cigarette Inventory, NAVSUP Form 1234 (fig. 3-5). These inventories must be certified and retained by the ship's store officer who will also add any receipts of tax-free tobacco products each time they are received.

If a discrepancy exists between the arriving and the departing inventories, the ship's store officer is required to submit a written report to the commanding officer concerning the differences. A copy of the report and inventories must be furnished to the inspecting officers and the internal revenue service officers.

Sea stores must also be removed from the retail store or snack bar while the ship is in a United States port unless the stay is 15 days or less and the time does not warrant physical movement of the stock. When sea stores are not removed from the store and the store is open for business, a daily inventory is required to make sure no sales of tax-free products are being made. Tax-free tobacco products may not remain in vending machines under any conditions while the ship is in a United States port.

At the discretion of the commanding officer, an optional procedure may be used instead of inventorying tax-free tobacco products when the ship is in a United States port for a period of 5 days or less and is scheduled to proceed beyond the 3-mile limit of the United States. When a ship arrives within the 3-mile limit of the United States, all tax-free tobacco products may be stowed in a storeroom that must be secured by replacing the locks and attaching numbered car seals. The numbered car seal must be attached to the lock in a manner that requires the seal to be broken before entering the storeroom. A log of the numbered car seals must be maintained by the ship's store officer. When bringing tax-free tobacco products aboard, the seal must be broken and the quantities received must be stowed immediately in the presence of the ship's store officer. The seal must be replaced and the number of the new seal must be entered in the car seal number log. Breakouts from storerooms when using this procedure are not authorized while the ship is within the 3-mile limit of the United States.

STOWAGE OF SHIP'S STORE STOCK

Stow ship's store stock so the storeroom space is used to its capacity and at the same time take

precautions to prevent damage and deterioration to stock. To use space properly, you should outline the planned use of the space. Stowage plans should be flexible to provide for changing conditions and requirements. For instance, if your ship is located in the shipyard for an extended overhaul, your requirements for stock will be greatly reduced and your plans for stowing stock will decrease. However, if your ship is planning an extended deployment overseas, you will require many stock items and need to do some preplanning before deployment. Preplanning for stowage of stock for deployment will normally occur 4 to 6 months before the actual departure date. The NAVRESSO fleet assistance team located near your ship is available to assist you in preparing stowage plans, but a request for assistance needs to be submitted at least 120 days before deployment. If your ship is underway or located in an area where technical assistance is not available, the individual ship will have to plan the stowage of stock on its own. Factors that will help you in deciding where to stow stock will be the storeroom's size, location, and characteristics. The characteristics include your stowage facilities such as bins, racks, deck gratings, and so forth. The purpose of these stowage facilities within the storeroom is to help you in choosing locations to fit the requirements for the material you are stowing and to prevent the waste of stowage space.

FUNDAMENTALS OF GOOD STOWAGE

When we discuss the proper stowage of stock it is a lot easier said than done. This is so true when we refer to the stowage of ship's store stock because it is so difficult to properly stow so many different items. The fundamentals of good stowage are those techniques, procedures, and precautions used to properly stow stock.

These fundamentals will not only help you in using your space to the fullest extent, but they will help you in preventing damage or deterioration to ship's store stock. There are some specific items of ship's store stock that require special stowage instructions in addition to these good fundamentals. The general requirements needed to obtain good stowage include the markings of stock, accessibility of stock, arrangement of stock, storeroom maintenance, issue and rotation of stock, proper ventilation and humidity control, and storeroom security.

The bulk storeroom custodian needs to know and follow the fundamentals listed previously

when stowing ship's store stock. Some of these fundamentals; are required and some are effective methods that have been used before in stowage operations. Although they have proven to be effective, knowledge and experience in using these fundamentals afford the custodian of the bulk storeroom the skills required to stow stock properly.

SAFETY

Safety cannot be overemphasized in any phase of the ship's store operation and especially in storeroom stowage. The safety precautions for storeroom stowage are contained in the *Navy Safety Precautions for Forces Afloat*, OPNAV-INST 5100.19, chapter 2, "Storeroom Stowage." As the bulk storeroom custodian, you should be familiar with these safety precautions and make sure they are carried out in the bulk storeroom. The ship's store officer is responsible for preparing appropriate safety precautions for the bulk storeroom. These safety precautions should be posted inside the bulk storeroom in plain view.

MANUAL HANDLING

All storeroom custodians should have a pair of leather work gloves because much of the work done inside the storerooms requires manual handling of stock due to limited space. It is important that you understand how to lift correctly because many times custodians do not think about how to lift or handle materials.

The results of improper handling of materials may result in a painful hernia, a strained or pulled muscle, or a disk lesion. The correct method of lifting objects is shown in figure 3-6. You should observe the following rules and precautions for lifting:

1. Do NOT lift an object if it is too heavy or too bulky for good balance. Get help or use mechanical aids such as a dolly or hand truck.
2. Keep the load close to the center of your body. The farther the load is from the small of your back, the greater the strain. That is the reason a heavy compact load is easier to lift than a bulky, lighter load—you just cannot get the bulky object close to you. The best way to handle a compact load is to squat down close to the load with one foot alongside it and the other foot behind it. With the feet comfortably spread, you will have better stability with the rear foot in the position for the upward thrust of the lift.

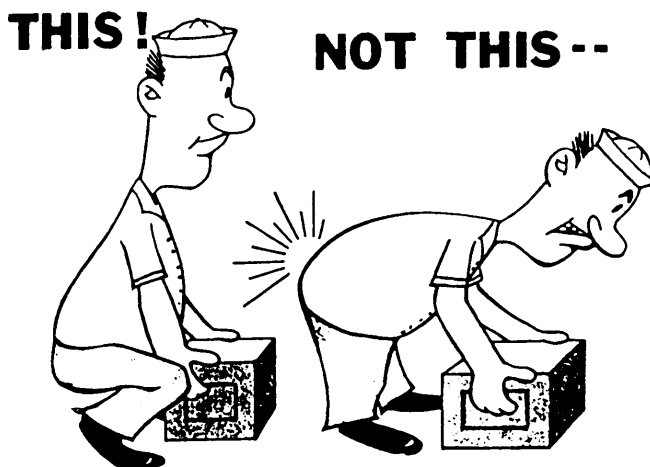


Figure 3-6.-Manual lifting.

3. Pull the load toward you, then lift it gradually. Avoid quick and jerky motions. Push up on your legs while keeping your back straight. A straight back keeps the spine, back muscles, and other organs of the body in the correct alignment. Tucking in your chin helps to align the spine. No matter what size the load, get as close to it as you can; then get a good grip by using the full palm and extending your fingers and hands around the object. Remember that your fingers have very little power and need the strength of your entire hand. Keep your arms and elbows tucked into the side of your body to help keep the body weight centered. Avoid twisting your body during the lift or while moving the load; change directions by moving your feet. Twisting your body during a lift is one of the most common causes of back injury.

4. Be sure to have a clear vision over the load you are handling.

5. Do NOT change your grip while carrying the load.

6. Face the spot in which you intend to set the object down; bend your knees keeping your back as straight as possible and the weight of the object close to your body.

7. Always allow enough room for the load to prevent injury to your toes and fingers.

8. When you are placing a load on the table or bench, set it down on the edge and push it forward with your arms and body. If the load is too heavy or too awkward for you to move alone—GET HELP! Remember: LIFT WITH YOUR LEGS, NOT YOUR BACK!

Markings of Stock

The bulk storeroom custodian is largely responsible for the condition of stock in his or her custody. The custodian must make sure stocks are rotated (first in, first out) so that older stocks do not become shelf-worn or deteriorated while newer stocks are broken out to the ship's store activities. The bulk storeroom custodian can prevent this from happening by placing ROM-generated labels on each case and marking the receipt date or manufacture date on each case before it is stowed. The labels generated by the ROM system contain information about each stock item. These labels, when used, should be placed on a predetermined spot on each stock item by the responsible custodian.

The manufacture date is a coded date shown by some manufacturers on each case. These codes are currently contained in NAVRESSOINST 4067.4, issued by NAVRESSO. For items that may be highly perishable or deteriorate easily, you should use the manufacture date and not the receipt date. When you use the receipt date instead of the manufacture date you are not considering the time the item has been in the supplier's warehouse. If, for example, the shelf life of the item is 5 months and the manufacture date is November 89, the product may begin to spoil or deteriorate around April 90. If you receive the item in February 90 and use the date of receipt, you are not considering the 3-month lapse between manufacture and receipt.

NAVRESSOINST 4067.4 contains codes used by various manufacturers to indicate the date of manufacture for products such as candy, cookies, crackers, tobacco products, canned drinks, and film. A copy of this instruction should be maintained in the bulk storeroom for use by the bulk storeroom custodian.

Accessibility of Stock

Accessibility of stock is simply allowing yourself the capability to reach and remove any stock items out of the bulk storeroom with the minimum of effort. Accessibility of stock is a very important fundamental of good stowage. When you receive new stock you must keep in mind that some day you will issue or inventory items in the storeroom. You do not want to stock 20 cases of an item on 1 case of a different item. More than likely you will use that 1 case before you use the 20 cases. With proper arrangement and use of the

storeroom facilities you should never have this problem.

Arrangement of Stock

Bulk storerooms should be neat and orderly and, when possible, container labels should be facing out. Containers should be arranged by item, brand name, and date of receipt or date of manufacture. This way the contents of the item can be determined without handling each item and it will facilitate breakouts, inventory, and proper turnover of stock. Case lots should be stowed on deck gratings and not placed directly on the deck. A few things to keep in mind when you are arranging stock are discussed below:

Item similarity—Items that are similar and have similar handling requirements should be stowed together when practical. This will make your job of issuing and controlling these stock items easier.

Item popularity—The popularity of an item must also be considered when arranging stock. Fast-moving stock should be stowed in areas that are easily accessible. Slow-moving stock should be stowed away from easily accessible areas.

Item size and weight—The size and weight of the item not only affect the amount of stowage space needed, but also affect your decision on where you will stow it. For example, a large, heavy item should be stowed in a location that will provide a balance between accessibility and required handling. In other words, do not stow heavy laundry supplies in the forward portion of the ship while the laundry is located aft.

Item quantity—The quantity of the items to be stocked affects the amount of space required and will affect the arrangements of other stock. If you have a large number of one stock item, it is always better for you to increase the amount of space needed to stock all the items in one space than splitting the items up into two or more different locations. Keeping the item in one location will also help in accounting for the item especially during inventory.

Breakable material—Fragile material should never be stowed in the same location with heavy material. It should be stowed in a separate location to prevent excessive movement while the ship is underway. Empty cardboard cartons may

be cut into strips and used to fill unused space where fragile material is located. Material received in glass containers must receive special attention since breakage not only results in loss of the item but may cause damage to other stores or create a hazard to personnel.

Aisles—When arranging stock, position an aisle about 30 inches wide in the storeroom so you will have access to all stock. If an aisle is not maintained, you will have to remove several items to get to others during breakouts or issues and inventory can turn into a nightmare. It is generally recognized that just before deployment and 1 month into deployment it may be hard to maintain an aisle in the storeroom due to the amounts of stock on board. Lack of stowage space is a very evident problem aboard ship and during pre-deployment planning these problems need to be resolved. The supply officer may be able to negotiate with other department heads for additional stowage space. If additional space is not available, stowage plans will have to be made on the space available.

Item characteristics—Most items of ship's store stock are of such nature that special stowage is not required. However, there are some stock items that require special considerations such as flammable stock, perishable stock, and so forth. We discuss some of these stock items later in this chapter.

Storeroom Maintenance

The responsible custodian of the bulk storeroom is responsible for cleaning and maintaining the space, including keeping the storeroom free of items that should be surveyed because they are damaged or deteriorated. When such items are present in the bulk storeroom, the responsible custodian should notify his or her supervisor so action can be taken to mark them down or survey them.

The neatness, cleanliness, and order of the bulk storeroom are also responsibilities of the custodian. These are carried out by proper housekeeping and maintenance of the space. Observation of good housekeeping practices in the bulk storeroom promotes safety, reduces losses from damage of merchandise, reduces fire hazards, and increases the efficiency of the bulk storeroom operation.

Before you secure for the day, break down all loose boxes, sweep, and remove all trash from the

bulk storeroom. Also inspect and clean bins, shelves, ventilation ducts, and fans periodically. After major receipts or breakouts, stock should be organized with the content labels visible.

The material condition of the space is also the responsibility of the responsible custodian. For instance, rust is an ever-present enemy and requires constant vigilance to keep it under control. Rust spots should be chipped, brushed or sanded, primed, and spot painted. Loose bolts should be tightened promptly to prevent possible damage to the storeroom or its contents. Pipes, valves, electrical systems, watertight fittings, and fire-fighting equipment must be examined daily and any defect reported to the ship's store officer. The ship's store officer should inspect all ship's store activities under his or her control each business day and submit required reports to the supply officer or duty supply officer before 8 o'clock reports. The method and the time of these reports are established in each ship's routine.

Before getting underway into open seas, storerooms must be thoroughly inspected and secured to prevent stores from shifting due to the ship's motion. Bulk stores must be braced or lashed to bulkheads, stanchions, or battens, and the fronts of open bins and shelves secured to prevent stores from falling out on the deck. Once you check and prepare your storerooms for sea, notify your supervisor to have the storeroom checked. After all ship's store spaces have been prepared for sea and checked, the leading Ship's Serviceman reports to the ship's store officer that all ship's store spaces are ready for sea. The ship's store officer passes this information to the supply officer so readiness reports for getting underway may be given to the officer of the deck in the pilothouse.

Issue and Rotation

Earlier you learned that the oldest stock on hand in the bulk storeroom should be issued first. Generally speaking, it is first in and first out. However, when deployed overseas, you may receive stock from naval supply depots or combat logistics force (CLF) units that was manufactured before the stock procured in the United States when loading out. Manufacture age codes that we discussed earlier are especially important in this case because they indicate the date of manufacture. In the instance above, the new stock just received is actually older than the stock already in the bulk storeroom and should be issued first.

Ventilation and Humidity Control

All storerooms must be well ventilated to prevent excessive heat and humidity because high temperature and humidity encourage bacteria growth and insect infestation. In addition, high humidity can result in mold and mildew and may cause mustiness in cookies, crackers, and tobacco products. Of course you have no control over storeroom location, but you are responsible for making sure space is left between cases and structural obstructions such as steam pipes to permit maximum ventilation. When possible, bulk storerooms will be ventilated once a week to permit air circulation and to remove stagnant air that can cause damage to perishable items.

STOREROOM SECURITY

Security of the bulk storeroom has been mentioned several times in this chapter but security cannot be overemphasized. No matter how well you fulfill other requirements for good stowage, without proper security your efforts will be useless. Security is not only important from a standpoint of preventing unauthorized use, pilferage, and theft of stock, it also prevents damage to stock and storeroom facilities and hazards to personnel and the ship due to improper stowage.

SPECIAL STOWAGE

Most items of supply are of such a nature that special stowage is not required. However, there are some items that require special considerations. For instance, some materials have characteristics that require the materials to be specially stowed or handled to prevent a hazard to personnel or facilities. Other materials require a high degree of protection because they have a limited stowage life and care must be taken to make sure the oldest stock or that which may have an earlier manufacture date is issued first. Also many foods or confections must be stowed in areas where the temperature can be controlled to prevent deterioration. When planning the stowage of ship's store items, you must recognize these factors and take appropriate action.

HAZARDOUS MATERIALS

Certain materials with inherent hazardous properties require special stowage facilities and

handling precautions. The *Naval Ships' Technical Manual*, chapter 670, and the *Consolidated Hazardous Item List* (CHIL), NAVSUP P-4500 (now known as the *Hazardous Materials Information System* (HMIS) List, DOD 6050.5) outline the requirements for stowage of dangerous, semisafe, and safe materials and list these materials under each classification.

Dangerous Materials

Dangerous materials include all types of compressed gases and materials that present a considerable fire hazard or other dangerous characteristics. These materials must be stowed in a cage within the paint and flammable liquid storerooms with access limited to the responsible custodian. Paint and oil constitute the bulk of material in this category that is stocked. The paint and flammable liquid storerooms are normally provided with sprinklers and CO₂ smothering systems that may be activated by automatic temperature sensitive devices inside the storerooms and by manual controls outside the storerooms. A flooding system operated manually outside the storerooms is an additional safety factor. When practical, these storerooms are located below the full load waterline, near either end of the vessel, and not adjacent to a magazine. They are equipped with watertight doors that must be locked and dogged when not in use.

Semisafe Materials

Semisafe materials include linseed oil, paints, and metal polish. These materials are considered safe as long as the containers have not been opened and do not leak. Any leakage must be cleaned up promptly and also the leaking or opened container issued for use or otherwise disposed of. All semisafe materials must be stowed in the paint and flammable liquids storeroom.

Safe Materials

Safe materials include deck wax, furniture polish, and laundry blue. Safe materials are not subject to spontaneous combustion and present no particular hazard due to reactions that might arise from broken containers. No special stowage, fire protection, or ventilation is needed for safe materials.

SPECIAL STOWAGE OF SHIP'S STORE STOCK

Certain items of ship's store stock are highly perishable in nature and, therefore, proper stowage techniques are important. You have already learned that the oldest stock on hand must be issued first, unless the newer stock was manufactured before the stock already in the storeroom. Perishable items should be inspected frequently for signs of damage, spoilage, insect infestation, or rodent contamination. If hot pipes, such as steam lines, are present in your stowage space, you should make sure they are insulated properly to prevent heat transfer to stowed food items. A high stowage temperature is always bad for perishable items. High temperatures increase the risk of bacterial growth, and insect infestation is particularly dangerous when accompanied by high humidity. When high humidity is present, chemical action is accelerated; food acids naturally present within cans become activated resulting in pinholing, blackening of contents, and swelling of cans. In the following section, we discuss specific ways you can prevent damage and personnel hazards from happening when stowing specific items. Although laundry and dry-cleaning chemicals require special considerations, they are not discussed in this section because they are discussed in later chapters.

Flammable Ship's Store Stock

Any ship's store stock that has a closed cup flash point of 200°F or less is classified as flammable stock. These authorized items of ship's store stock are listed in the NAVSUP P-487, par. 6008. The flash point of a liquid can be defined as the lowest temperature at which its vapor forms an ignitable mixture within the air. The flash point measures the risk of combustion when the liquid escapes its packaging. Do not confuse the flash point with the combustion temperature which is when the liquid will actually burn. As long as the temperature remains below the flash point, there is no potential danger of a liquid burning.

The following precautions are taken to minimize the hazards of handling flammable ship's store stock:

- Carefully estimate needs to prevent overstocking of flammable items. Limit retail store quantities to 3 days of anticipated sales.

- Once you receive flammable ship's store stock, check it for condition, correct identification, and proper marking/labeling.

- Do not concentrate flammable items in the store; stow remaining stocks in a flammable liquid storeroom or other protected space.

- Identify flammable stock on the Stock Record, NAVSUP Form 464.

- Periodically inspect flammable stock in the store and in the storeroom for leakage.

- Post NO SMOKING signs and make sure good housekeeping practices are strictly followed in areas containing flammable stock.

Clothing

Dunnage or deck gratings must be used to keep clothing cases off the deck and away from bulkheads since moisture caused by sweating can be absorbed by the cases and result in stains and mildew on the clothing. Clothing should be stowed in a systematic manner; that is, arranged according to stock number and by sizes of articles. When preparing for inventory you will save time in getting the stock ready for counting. Remember to always put the new stock in back of the old stock, so that you can follow the first in, first out rule when issuing material.

Clothing stock, such as gold braids, buttons, cap devices, insignia, and so forth, must be wrapped individually in nontarnishing paper and not held together by rubber bands. Rubber bands and certain types of wrapping paper contain sulfur that tarnishes gilt or gold articles, especially braid and thread. Always be careful when handling white articles because they stain so easily. Any clothing items made with rubber should be kept clear of heat. Frequently you must inspect your storeroom where clothing items are stowed for dampness and the presence of moths.

Food Products and Snack Bar Items

The proper stowage of food products and snack bar items is essential if you are going to give the customer a fresh product. Food products should be stowed at 70°F. Cookies or crackers must be stowed in a well-ventilated space because they will rapidly deteriorate and become stale and musty when the humidity is greater than 75 percent.

Light can cause deterioration to snack bar supplies bottled in glass containers. The cases holding these glass containers should not be opened until ready for use or sale. High temperatures are also the chief cause of accelerated spoilage in snack bar canned foods and toppings and can speed up the pinholing action caused by the acid in canned citrus fruit juices. All snack bar supplies except cups, dishes, and spoons should be stowed in a cool, dry space.

Candy

Candy is included under the confections category aboard ship. Candy will keep reasonably well when it is stowed in a dry space and air freely circulates around the cases. If the air circulation is improper, hot spots may develop and cause the product to deteriorate. Never stack cases of candy over 8 feet high because the pressure and weight will damage the product in the lowercase. Never stow candy with other ship's store stock such as dry goods protected with camphor, detergents, or other products, or the candy will spoil.

Candies can also be spoiled by high temperature and humidity. Chocolates should be stowed and displayed at 60° to 65°F with a relative humidity of 50 percent. If chocolates are stowed above 70°F, the cocoa butter will melt and rise to the surface of the candy causing a condition referred to as white bloom. Although it is still edible, it looks bad and will hurt sales.

Nonchocolate candies are affected more by high humidity than temperature. High humidity will change the taste of nonchocolates. With items such as marshmallows, nougat, and fudge it is just the opposite, if the humidity is less than 40 percent, these types of items will dry out. Other nonchocolates such as jellies, caramels, and hard candies will become sticky when the relative humidity is over 60 percent.

Film

Film should be stowed in a cool, well-ventilated space since it deteriorates rapidly in high

heat and humidity. Film stocks must be rotated and issued according to the expiration date printed on the package by the manufacturer. Cut film and sensitized photographic paper should be stowed on edge to prevent them from sticking together.

Tobacco

To keep tobacco products from becoming stale and musty, they should be stowed in a dry, well-ventilated space. Cigarettes should be stowed in a cool place at 70° to 75°F with a relative humidity of 60 percent. Cigars and tobacco require dry stowage of about 60°F.

Canned Drinks

Canned drinks can last for quite a while if they are stowed properly. First, always cross stock sodas to keep the stack solid. Second, do not stack canned drinks too high or bursting and crushing can occur to the lower layers. Third, do not stack canned drinks too close to steam or heated pipes. Fourth, stow canned drinks on pallets or deck gratings secured with battens. This will not only provide good air circulation around the stacks, but will prevent the stacks from falling and becoming damaged while the ship is underway.

Canned drinks must also be properly rotated so the customer purchases a fresh product. You must frequently inspect canned drinks and remove any leaking or wet cans from the pallet to prevent secondary damage. Secondary damage occurs when you leave damaged or leaking cases in a stack of canned drinks. If they are not removed, these cases will cause the cardboard, plastic wrap, and cans below or adjacent to the damaged cases to become wet and sticky for long periods of time. This wetness is sometimes not seen from the outside of the pallet and corrosion will take place. The outside of good cans deteriorates and begins to pinhole and leak. Secondary damage can destroy an entire pallet if the damage is not corrected promptly.